GenCore version 5.1.6

OM protein - protein search, using sw model

Run on: June 25, 2003, 14:20:41 ; Search time 33 Seconds
(without alignments)
444.169 Million cell updates/sec

Title: US-09-622-613B-15
Perfect score: 602
Sequence: 1 QNWATFQQKHIINTPIICNT.....ICVKCENQYPVHFAGIGRCP 110

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 908470 seqs, 133250620 residues

Total number of hits satisfying chosen parameters: 908470

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

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Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	% Query Match	Length	DB	ID	Description
1	602	100.0	110	20	AAY28872	Rana catesbeiana o
2	602	100.0	111	20	AAY28873	Recombinant Met(-1
3	597	99.2	110	20	AAY28877	Recombinant RaCOR1
4	597	99.2	111	20	AAY28878	Recombinant Met(-1
5	596	99.0	110	20	AAY28874	Recombinant RaCOR1
6	596	99.0	111	20	AAY28876	Recombinant Met(-1
7	588.5	97.8	111	20	AAY33321	Frog lectin protei
8	284.5	47.3	104	18	AAW06544	Antitumour protein
9	281.5	46.8	104	20	AAY28865	Rana pipiens liver
10	281.5	46.8	105	20	AAY28867	Recombinant Met(-1
11	281.5	46.8	127	20	AAY28879	Rana pipiens Clone
12	278.5	46.3	104	20	AAY28866	Recombinant RaPLR1
13	278.5	46.3	105	20	AAY28869	Recombinant Met(-1
14	277.5	46.1	104	18	AAW30301	Recombinant onc pr
15	277.5	46.1	104	22	AAB31666	Amino acid sequenc
16	277.5	46.1	105	20	AAY39400	Recombinant frog O
17	277.5	46.1	379	18	AAW35126	R. pipiens recombi
18	276.5	45.9	104	20	AAY28870	Recombinant RaPLR1
19	276.5	45.9	105	20	AAY28871	Recombinant Met(-1
20	274.5	45.6	104	12	AAR12344	Protein with activ
21	274.5	45.6	104	15	AAR47303	ONCONASE (pharmace
22	274.5	45.6	104	17	AAW00736	Protein derived fr
23	274.5	45.6	104	18	AAW06543	Antitumour protein
24	274.5	45.6	104	18	AAW14065	Onconase (RTM) pro
25	274.5	45.6	104	20	AAY33322	Frog onconase prot
26	274.5	45.6	104	20	AAW88233	Rana pipiens RNase
27	274.5	45.6	105	18	AAW35123	R. pipiens recombi
28	274.5	45.6	355	18	AAW35125	R. pipiens recombi
29	274.5	45.6	358	18	AAW35130	R. pipiens recombi
30	272.5	45.3	104	22	AAB31667	Amino acid sequenc
31	272.5	45.3	106	18	AAW35122	R. pipiens recombi
32	272.5	45.3	107	18	AAW35117	R. pipiens recombi
33	272.5	45.3	112	18	AAW35118	R. pipiens recombi
34	272.5	45.3	251	18	AAW35134	R. pipiens recombi
35	272.5	45.3	254	18	AAW35135	R. pipiens recombi
36	272.5	45.3	355	18	AAW35129	R. pipiens recombi
37	272.5	45.3	355	18	AAW35133	R. pipiens recombi
38	272.5	45.3	366	18	AAW35132	R. pipiens recombi
39	271.5	45.1	104	18	AAW30302	Recombinant onc pr
40	267.5	44.4	104	18	AAW18224	Antitumour generic
41	267.5	44.4	105	18	AAW35115	R. pipiens recombi
42	267.5	44.4	105	18	AAW35116	R. pipiens recombi
43	263.5	43.8	358	18	AAW35127	R. pipiens recombi
44	263.5	43.8	365	18	AAW35131	R. pipiens recombi
45	249.5	41.4	107	18	AAW35120	R. pipiens recombi

ALIGNMENTS

RESULT 1
AAY28872
ID AAY28872 standard; Protein; 110 AA.
XX
AC AAY28872;
XX
DT 25-JAN-2000 (first entry)
XX
DE Rana catesbeiana oocyte ribonuclease (RaCOR1) amino acid sequence.
XX
KW Rana catesbeiana oocyte ribonuclease; RaCOR1; covalently bound; CD22;
KW LL2 antibody; ligand binding moiety; cancerous B cell; Kaposi's Sarcoma;
KW human chorionic gonadotrophin; hCG; recombinant ribonuclease; bullfrog;
KW signal peptide; cytotoxic fusion protein; cancer; autoimmune disease;
KW RNase.
XX
OS Rana catesbeiana.
OS Synthetic.
XX
PN WO9950398-A2.
XX
PD 07-OCT-1999.
XX
PF 26-MAR-1999; 99WO-US06641.
XX
PR 27-MAR-1998; 98US-0079751.
XX
PA (USSH) US DEPT HEALTH & HUMAN SERVICES.
XX
PI Newton DL, Rybak SM;
XX
DR WPI; 1999-610847/52.
DR N-PSDB; AAZ08130.

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XX
PT   New recombinant ribonucleases, used for killing target cells, e.g. for
PT   treating cancers, viral infections or autoimmune diseases -
XX
PS   Claim 22; Page 62; 71pp; English.
XX
CC   The present sequence is a Rana catesbeiana oocyte ribonuclease (RaCOR1)
CC   protein encoded by a cDNA modified for expression in E. coli. Carboxy
CC   terminal end of RaCOR1 has a covalently bound ligand binding moiety,
CC   which can be a LL2 antibody directed against CD22 on cancerous B cells
CC   or human chorionic gonadotrophin (hCG) effective against Kaposi's
CC   Sarcoma cells. Recombinant ribonucleases can be expressed in bacteria
CC   without an N-terminal methionine due to the presence of a signal peptide
CC   that is cleaved by bacteria. The soluble expression of ribonuclease
CC   allows the proteins to be fused in-frame with ligand binding moieties to
CC   form cytotoxic fusion proteins. They can be used for treatment of cancer
CC   and autoimmune diseases.
XX
SQ   Sequence   110 AA;

  Query Match           100.0%;  Score 602;  DB 20;  Length 110;
  Best Local Similarity  100.0%;  Pred. No. 2.3e-61;
  Matches  110;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

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Db          1 QNWATFQQKHIINTPIICNTIMDNNIYIVGGQCKRVNTFIISSATTVKAICTGVINMNVL 60

Qy         61 STTRFQLNTCTRTSITPRPCPYSSRTETNYICVKCENQYPVHFAGIGRCP 110
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Db         61 STTRFQLNTCTRTSITPRPCPYSSRTETNYICVKCENQYPVHFAGIGRCP 110


RESULT 2
AAY28873
ID   AAY28873 standard; Protein; 111 AA.
XX
AC   AAY28873;
XX
DT   25-JAN-2000  (first entry)
XX
DE   Recombinant Met(-1) RaCOR1.
XX
KW   Recombinant Met(-1) Rana catesbeiana oocyte ribonuclease; RaCOR1; CD22;
KW   covalently bound; LL2 antibody; ligand binding moiety; cancerous B cell;
KW   Kaposi's sarcoma; human chorionic gonadotrophin; hCG; signal peptide;
KW   recombinant ribonuclease; cytotoxic fusion protein; cancer; bullfrog;
KW   RNase; autoimmune disease.
XX
OS   Rana catesbeiana.
OS   Synthetic.
XX
FH   Key             Location/Qualifiers
FT   Misc-difference 1
FT                   /note= "Met not found in wild type RaCOR1"
XX
PN   WO9950398-A2.
XX
PD   07-OCT-1999.
XX
PF   26-MAR-1999;   99WO-US06641.
XX
PR   27-MAR-1998;   98US-0079751.
XX
PA   (USSH ) US DEPT HEALTH & HUMAN SERVICES.
XX
PI   Newton DL,  Rybak SM;
XX
DR   WPI; 1999-610847/52.
DR   N-PSDB; AAZ08131.
XX
PT   New recombinant ribonucleases, used for killing target cells, e.g. for
PT   treating cancers, viral infections or autoimmune diseases -
XX
PS   Claim 22; Page 63; 71pp; English.
XX
CC   The present sequence is a recombinant Rana catesbeiana oocyte
CC   ribonuclease (RaCOR1) protein with Met at position 1. Carboxy terminal
CC   end of recombinant RaCOR1 has a covalently bound ligand binding moiety,
CC   which can be a LL2 antibody directed against CD22 on cancerous B cells or
CC   human chorionic gonadotrophin (hCG) effective against Kaposi's sarcoma
CC   cells. Recombinant ribonucleases can be expressed in bacteria without an
CC   N-terminal methionine due to the presence of a signal peptide that is
CC   cleaved by bacteria. The soluble expression of ribonuclease allows the
CC   proteins to be fused in-frame with ligand binding moieties to form
CC   cytotoxic fusion proteins. They can be used for treatment of cancer and
CC   autoimmune diseases.
XX
SQ   Sequence   111 AA;

  Query Match           100.0%;  Score 602;  DB 20;  Length 111;
  Best Local Similarity  100.0%;  Pred. No. 2.3e-61;
  Matches  110;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

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Qy         61 STTRFQLNTCTRTSITPRPCPYSSRTETNYICVKCENQYPVHFAGIGRCP 110
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Db         62 STTRFQLNTCTRTSITPRPCPYSSRTETNYICVKCENQYPVHFAGIGRCP 111


RESULT 3
AAY28877
ID   AAY28877 standard; Protein; 110 AA.
XX
AC   AAY28877;
XX
DT   25-JAN-2000  (first entry)
XX
DE   Recombinant RaCOR1 Gln1Ser amino acid sequence.
XX
KW   Recombinant Rana catesbeiana oocyte ribonuclease; RaCOR1 Gln1Ser; CD22;
KW   covalently bound; LL2 antibody; ligand binding moiety; cancerous B cell;
KW   bullfrog; Kaposi's sarcoma; human chorionic gonadotrophin; hCG; RNase;
KW   signal peptide; recombinant ribonuclease; cytotoxic fusion protein;
KW   cancer; autoimmune disease.
XX
OS   Rana catesbeiana.
OS   Synthetic.
XX
FH   Key             Location/Qualifiers
FT   Misc-difference 1
FT                   /note= "Wild type Gln replaced with Ser"
XX
PN   WO9950398-A2.
XX
PD   07-OCT-1999.
XX
PF   26-MAR-1999;   99WO-US06641.
XX
PR   27-MAR-1998;   98US-0079751.
XX
PA   (USSH ) US DEPT HEALTH & HUMAN SERVICES.
XX
PI   Newton DL,  Rybak SM;
XX
DR   WPI; 1999-610847/52.
DR   N-PSDB; AAZ08134.
XX
PT   New recombinant ribonucleases, used for killing target cells, e.g. for
PT   treating cancers, viral infections or autoimmune diseases -
XX
PS   Claim 22; Page 67; 71pp; English.
XX
```

```
CC   The present sequence is a recombinant Rana catesbeiana oocyte
CC   ribonuclease (RaCOR1) protein with Gln1Ser. Carboxy terminal end of
CC   recombinant RaCOR1 has a covalently bound ligand binding moiety, which
CC   can be a LL2 antibody directed against CD22 on cancerous B cells or
CC   human chorionic gonadotrophin (hCG) effective against Kaposi's sarcoma
CC   cells. Recombinant ribonucleases can be expressed in bacteria without an
CC   N-terminal methionine due to the presence of a signal peptide that is
CC   cleaved by bacteria. The soluble expression of ribonuclease allows the
CC   proteins to be fused in-frame with ligand binding moieties to form
CC   cytotoxic fusion proteins. They can be used for treatment of cancer and
CC   autoimmune diseases.
XX
SQ   Sequence   110 AA;

  Query Match           99.2%;  Score 597;  DB 20;  Length 110;
  Best Local Similarity  100.0%;  Pred. No. 8.7e-61;
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Db         62 TTRFQLNTCTRTSITPRPCPYSSRTETNYICVKCENQYPVHFAGIGRCP 110


RESULT 4
AAY28878
ID   AAY28878 standard; Protein; 111 AA.
XX
AC   AAY28878;
XX
DT   25-JAN-2000  (first entry)
XX
DE   Recombinant Met(-1) RaCOR1 Gln1Ser amino acid sequence.
XX
KW   Recombinant Met(-1) Rana catesbeiana oocyte ribonuclease Gln1Ser; RaCOR1;
KW   covalently bound; LL2 antibody; ligand binding moiety; cancerous B cell;
KW   Kaposi's sarcoma; human chorionic gonadotrophin; hCG; signal peptide;
KW   recombinant ribonuclease; cytotoxic fusion protein; cancer; bullfrog;
KW   CD22; RNase; autoimmune disease.
XX
OS   Rana catesbeiana.
OS   Synthetic.
XX
FH   Key             Location/Qualifiers
FT   Misc-difference 1
FT                   /note= "Met not found in wild type RaCOR1"
FT   Misc-difference 2
FT                   /note= "Wild type Gln replaced with Ser"
XX
PN   WO9950398-A2.
XX
PD   07-OCT-1999.
XX
PF   26-MAR-1999;   99WO-US06641.
XX
PR   27-MAR-1998;   98US-0079751.
XX
PA   (USSH ) US DEPT HEALTH & HUMAN SERVICES.
XX
PI   Newton DL,  Rybak SM;
XX
DR   WPI; 1999-610847/52.
DR   N-PSDB; AAZ08135.
XX
PT   New recombinant ribonucleases, used for killing target cells, e.g. for
PT   treating cancers, viral infections or autoimmune diseases
XX
PS   Claim 22; Page 68; 71pp; English.
XX
CC   The present sequence is a recombinant Rana catesbeiana ribonuclease
CC   (RaCOR1) protein with Met at position 1 and Gln2Ser. Carboxy terminal end
CC   of recombinant RaCOR1 has a covalently bound ligand binding moiety, which
CC   can be a LL2 antibody directed against CD22 on cancerous B cells or human
CC   chorionic gonadotrophin (hCG) effective against Kaposi's sarcoma cells.
CC   Recombinant ribonucleases can be expressed in bacteria without an N-
CC   terminal methionine due to the presence of a signal peptide that is
CC   cleaved by bacteria. The soluble expression of ribonuclease allows the
CC   proteins to be fused in-frame with ligand binding moieties to form
CC   cytotoxic fusion proteins. They can be used for treatment of cancer and
CC   autoimmune diseases.
XX
SQ   Sequence   111 AA;

  Query Match           99.2%;  Score 597;  DB 20;  Length 111;
  Best Local Similarity  100.0%;  Pred. No. 8.8e-61;
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Qy         62 TTRFQLNTCTRTSITPRPCPYSSRTETNYICVKCENQYPVHFAGIGRCP 110
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Db         63 TTRFQLNTCTRTSITPRPCPYSSRTETNYICVKCENQYPVHFAGIGRCP 111


RESULT 5
AAY28874
ID   AAY28874 standard; Protein; 110 AA.
XX
AC   AAY28874;
XX
DT   25-JAN-2000  (first entry)
XX
DE   Recombinant RaCOR1 Met22Leu Met57Leu amino acid sequence.
XX
KW   Recombinant Rana catesbeiana oocyte ribonuclease; covalently bound;
KW   RaCOR1 Met22Leu Met57Leu; LL2 antibody; ligand binding moiety; CD22;
KW   cancerous B cell; Kaposi's sarcoma; human chorionic gonadotrophin; hCG;
KW   signal peptide; recombinant ribonuclease; cytotoxic fusion protein;
KW   cancer; bullfrog; RNase; autoimmune disease.
XX
OS   Rana catesbeiana.
OS   Synthetic.
XX
FH   Key             Location/Qualifiers
FT   Misc-difference 22
FT                   /note= "Wild type Met replaced with Leu"
FT   Misc-difference 57
FT                   /note= "Wild type Met replaced with Leu"
XX
PN   WO9950398-A2.
XX
PD   07-OCT-1999.
XX
PF   26-MAR-1999;   99WO-US06641.
XX
PR   27-MAR-1998;   98US-0079751.
XX
PA   (USSH ) US DEPT HEALTH & HUMAN SERVICES.
XX
PI   Newton DL,  Rybak SM;
XX
DR   WPI; 1999-610847/52.
DR   N-PSDB; AAZ08132.
XX
PT   New recombinant ribonucleases, used for killing target cells, e.g. for
PT   treating cancers, viral infections or autoimmune diseases
XX
PS   Claim 22; Page 64; 71pp; English.
XX
CC   The present sequence is a recombinant Rana catesbeiana oocyte
CC   ribonuclease (RaCOR1) protein with Met22Leu Met57Leu. Carboxy terminal
```

```
CC   end of recombinant RaCOR1 has a covalently bound ligand binding moiety,
CC   which can be a LL2 antibody directed against CD22 on cancerous B cells
CC   or human chorionic gonadotrophin (hCG) effective against Kaposi's sarcoma
CC   cells. Recombinant ribonucleases can be expressed in bacteria without an
CC   N-terminal methionine due to the presence of a signal peptide that is
CC   cleaved by bacteria. The soluble expression of ribonuclease allows the
CC   proteins to be fused in-frame with ligand binding moieties to form
CC   cytotoxic fusion proteins. They can be used for treatment of cancer and
CC   autoimmune diseases.
XX
SQ   Sequence   110 AA;

  Query Match           99.0%;  Score 596;  DB 20;  Length 110;
  Best Local Similarity  98.2%;  Pred. No. 1.1e-60;
  Matches  108;  Conservative    2;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 QNWATFQQKHIINTPIICNTIMDNNIYIVGGQCKRVNTFIISSATTVKAICTGVINMNVL 60
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Db          1 QNWATFQQKHIINTPIICNTILDNNIYIVGGQCKRVNTFIISSATTVKAICTGVINLNVL 60

Qy         61 STTRFQLNTCTRTSITPRPCPYSSRTETNYICVKCENQYPVHFAGIGRCP 110
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Db         61 STTRFQLNTCTRTSITPRPCPYSSRTETNYICVKCENQYPVHFAGIGRCP 110


RESULT 6
AAY28876
ID   AAY28876 standard; Protein; 111 AA.
XX
AC   AAY28876;
XX
DT   25-JAN-2000  (first entry)
XX
DE   Recombinant Met(-1) RaCOR1 Met22Leu Met57Leu-(His)6 protein.
XX
KW   Met(-1) Rana catesbeiana ribonuclease Met22Leu Met57Leu-(His)6; RaCOR1;
KW   recombinant; CD22; covalently bound; LL2 antibody; ligand binding moiety;
KW   cancerous B cell; Kaposi's sarcoma; human chorionic gonadotrophin; hCG;
KW   signal peptide; recombinant ribonuclease; cytotoxic fusion protein;
KW   cancer; bullfrog; RNase; autoimmune disease.
XX
OS   Rana catesbeiana.
OS   Synthetic.
XX
FH   Key             Location/Qualifiers
FT   Misc-difference 1
FT                   /note= "(His)6 histidine tag attached to N-terminal Met"
FT   Misc-difference 1
FT                   /note= "Met not found in wild type RaCOR1"
FT   Misc-difference 23
FT                   /note= "Wild type Met replaced with Leu"
FT   Misc-difference 58
FT                   /note= "Wild type Met replaced with Leu"
XX
PN   WO9950398-A2.
XX
PD   07-OCT-1999.
XX
PF   26-MAR-1999;   99WO-US06641.
XX
PR   27-MAR-1998;   98US-0079751.
XX
PA   (USSH ) US DEPT HEALTH & HUMAN SERVICES.
XX
PI   Newton DL,  Rybak SM;
XX
DR   WPI; 1999-610847/52.
DR   N-PSDB; AAZ08133.
XX
PT   New recombinant ribonucleases, used for killing target cells, e.g. for
PT   treating cancers, viral infections or autoimmune diseases -
XX
PS   Claim 22; Page 66; 71pp; English.

XX
CC   The present sequence is a recombinant Rana catesbeiana oocyte
CC   ribonuclease (RaCOR1) protein with Met at position 1 attached to a
CC   (His)6 tag, Met23Leu and Met58Leu. Carboxy terminal end of recombinant
CC   RaCOR1 has a covalently bound ligand binding moiety, which can be a LL2
CC   antibody directed against CD22 on cancerous B cells or human chorionic
CC   gonadotrophin (hCG) effective against Kaposi's sarcoma cells. Recombinant
CC   ribonucleases can be expressed in bacteria without an N-terminal
CC   methionine due to the presence of a signal peptide that is cleaved by
CC   bacteria. The soluble expression of ribonuclease allows the proteins to
CC   be fused in-frame with ligand binding moieties to form cytotoxic fusion
CC   proteins. They can be used for treatment of cancer and autoimmune
CC   diseases.
XX
SQ   Sequence   111 AA;

  Query Match           99.0%;  Score 596;  DB 20;  Length 111;
  Best Local Similarity  98.2%;  Pred. No. 1.1e-60;
  Matches  108;  Conservative    2;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 QNWATFQQKHIINTPIICNTIMDNNIYIVGGQCKRVNTFIISSATTVKAICTGVINMNVL 60
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Db          2 QNWATFQQKHIINTPIICNTILDNNIYIVGGQCKRVNTFIISSATTVKAICTGVINLNVL 61

Qy         61 STTRFQLNTCTRTSITPRPCPYSSRTETNYICVKCENQYPVHFAGIGRCP 110
              ||||||||||||||||||||||||||||||||||||||||||||||||||
Db         62 STTRFQLNTCTRTSITPRPCPYSSRTETNYICVKCENQYPVHFAGIGRCP 111


RESULT 7
AAY33321
ID   AAY33321 standard; Protein; 111 AA.
XX
AC   AAY33321;
XX
DT   29-NOV-1999  (first entry)
XX
DE   Frog lectin protein fragment.
XX
KW   Cytotoxic; RNase; ribonuclease; pancreatic; antibody; light chain;
KW   heavy chain; cell surface marker; treatment; tumor; viral infection;
KW   parasite infection; immune dysfunctional cell; autoimmune disease;
KW   contraceptive; cell separation; transplantation; bone marrow ablation;
KW   leukemia cell; T-cell; graft-versus-host disease; bullfrog; lectin.
XX
OS   Rana catesbeiana.
XX
PN   US5955073-A.
XX
PD   21-SEP-1999.
XX
PF   09-JUL-1997;   97US-0891848.
XX
PR   22-SEP-1993;   93US-0125462.
PR   22-OCT-1991;   91US-0779195.
PR   20-APR-1990;   90US-0510696.
PR   04-FEB-1993;   93US-0014082.
XX
PA   (USSH ) US DEPT HEALTH & HUMAN SERVICES.
XX
PI   Rybak SM,  Newton DL,  Nicholls PJ,  Youle RJ;
XX
DR   WPI; 1999-560488/47.
XX
PT   Recombinantly fused pancreatic RNase-targeting proteins useful for
PT   treating tumors, infections, immune or autoimmune disorders and as a
PT   contraceptive -
XX
PS   Example 3; Fig 19; 47pp; English.
XX
CC   This invention describes a novel nucleic acid construct comprising
CC   sequences encoding functional pancreatic RNase and a second protein
CC   (preferably the light and heavy chains of an antibody) which binds a
```

```
CC   specific cell surface marker on a target cell and functions as a
CC   cytotoxic agent. The products can be used for selectively killing cells
CC   expressing a specific surface marker. They can be used for treating
CC   tumors or infected cells (e.g. cells infected by viruses (especially
CC   latent or chronic virus infections, such as human immunodeficiency virus
CC   (HIV)-1, Epstein-Barr virus, herpes viruses (herpes simplex types I and
CC   II), hepatitis viruses (B, non-A-non-B, and delta), herpes zoster,
CC   cytomegalovirus)) and cells infected with parasites (such as the malaria
CC   parasite)). They can also be used for treating immune dysfunctional cells
CC   in immune and autoimmune diseases. Additionally, they may be used as
CC   contraceptives. Finally they can also be used for cell separation in
CC   vitro by selectively killing unwanted types of cells (e.g. in bone
CC   marrow) prior to transplantation into a patient undergoing marrow
CC   ablation by radiation or for killing leukemia cells or T-cells that would
CC   cause graft-versus-host disease. This sequence represents a bullfrog
CC   (Rana catesbeiana) lectin used to describe the method of the invention.
XX
SQ   Sequence   111 AA;

  Query Match             97.8%;  Score 588.5;  DB 20;  Length 111;
  Best Local Similarity   98.2%;  Pred. No. 8.3e-60;
  Matches  109;  Conservative    1;  Mismatches    0;  Indels    1;  Gaps    1;

Qy          1 QNWATFQQKHIINTPII-CNTIMDNNIYIVGGQCKRVNTFIISSATTVKAICTGVINMNV 59
              :|||||||||||||||| |||||||||||||||||||||||||||||||||||||||||||
Db          1 ENWATFQQKHIINTPIINCNTIMDNNIYIVGGQCKRVNTFIISSATTVKAICTGVINMNV 60

Qy         60 LSTTRFQLNTCTRTSITPRPCPYSSRTETNYICVKCENQYPVHFAGIGRCP 110
              ||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 LSTTRFQLNTCTRTSITPRPCPYSSRTETNYICVKCENQYPVHFAGIGRCP 111


RESULT 8
AAW06544
ID   AAW06544 standard; protein; 104 AA.
XX
AC   AAW06544;
XX
DT   22-AUG-1997  (first entry)
XX
DE   Antitumour protein from Rana pipiens oocytes.
XX
KW   Tumour; chemotherapy; radiotherapy; frog.
XX
OS   Rana pipiens.
XX
PN   WO9639428-A1.
XX
PD   12-DEC-1996.
XX
PF   03-JUN-1996;   96WO-US08304.
XX
PR   06-JUN-1995;   95US-0467955.
XX
PA   (ALFA-) ALFACELL CORP.
XX
PI   Ardelt WJ;
XX
DR   WPI; 1997-043063/04.
XX
PT   Antitumour proteins from Rana pipiens oocyte(s) - have fewer
PT   disadvantages than chemotherapy, surgery and radiotherapy
XX
PS   Claim 8; Page 28; 45pp; English.
XX
CC   The present sequence is a specifically claimed example of an
CC   antitumour protein from the generic protein in AAW18224, with the
CC   molecular weight 12000. This is one of two preferred proteins (the
CC   other in AAW06543) that have been isolated from Rana pipiens oocytes.
CC   Both proteins have a blocked amino terminal group and are essentially
CC   free of carbohydrates. The proteins are used to treat tumours. Use of
CC   the peptides has fewer disadvantages than chemotherapy, radiotherapy
CC   and surgery in the treatment of tumours.
XX
SQ   Sequence   104 AA;

  Query Match             47.3%;  Score 284.5;  DB 18;  Length 104;
  Best Local Similarity   49.5%;  Pred. No. 6.2e-25;
  Matches   55;  Conservative   16;  Mismatches   31;  Indels    9;  Gaps    4;

Qy          1 QNWATFQQKHIINT-PIICNTIMDNNIYIVGGQCKRVNTFIISSATTVKAICTGVI-NMN 58
              ::| |||:||: ||  : || ||  |::     ||  |||| |    ||||| |:| : |
Db          1 EDWLTFQKKHVTNTRDVDCNNIMSTNLF----HCKDKNTFIYSRPEPVKAICKGIIASKN 56

Qy         59 VLSTTRFQLNTCTRTSITPRPCPYSSRTETNYICVKCENQYPVHFAGIGRC 109
              ||:|: | |: |   ::| ||| |  :  ||  || |||| |||| |:|||
Db         57 VLTTSEFYLSDC---NVTSRPCKYKLKKSTNKFCVTCENQAPVHFVGVGRC 104


RESULT 9
AAY28865
ID   AAY28865 standard; Protein; 104 AA.
XX
AC   AAY28865;
XX
DT   25-JAN-2000  (first entry)
XX
DE   Rana pipiens liver ribonuclease (RaPLR1).
XX
KW   Rana pipiens liver ribonuclease; RaPLR1; covalently bound; LL2 antibody;
KW   ligand binding moiety; CD22; cancerous B cell; Kaposi's Sarcoma; frog;
KW   human chorionic gonadotrophin; hCG; recombinant ribonuclease; RNase;
KW   signal peptide; cytotoxic fusion protein; cancer; autoimmune disease.
XX
OS   Rana pipiens.
XX
PN   WO9950398-A2.
XX
PD   07-OCT-1999.
XX
PF   26-MAR-1999;   99WO-US06641.
XX
PR   27-MAR-1998;   98US-0079751.
XX
PA   (USSH ) US DEPT HEALTH & HUMAN SERVICES.
XX
PI   Newton DL,  Rybak SM;
XX
DR   WPI; 1999-610847/52.
DR   N-PSDB; AAZ08124.
XX
PT   New recombinant ribonucleases, used for killing target cells, e.g. for
PT   treating cancers, viral infections or autoimmune diseases -
XX
PS   Claim 1; Page 55; 71pp; English.
XX
CC   The present sequence is Rana pipiens liver ribonuclease (RaPLR1)
CC   protein. Carboxy terminal end of RaPLR1 has a covalently bound
CC   ligand binding moiety, which can be a LL2 antibody directed against
CC   CD22 on cancerous B cells or human chorionic gonadotrophin (hCG)
CC   effective against Kaposi's Sarcoma cells. Recombinant ribonucleases can
CC   be expressed in bacteria without an N-terminal methionine due to the
CC   presence of a signal peptide that is cleaved by bacteria. The soluble
CC   expression of ribonuclease allows the proteins to be fused in-frame with
CC   ligand binding moieties to form cytotoxic fusion proteins. They can be
CC   used for treatment of cancer and autoimmune diseases.
XX
SQ   Sequence   104 AA;

  Query Match             46.8%;  Score 281.5;  DB 20;  Length 104;
  Best Local Similarity   49.5%;  Pred. No. 1.4e-24;
  Matches   55;  Conservative   15;  Mismatches   32;  Indels    9;  Gaps    4;

Qy          1 QNWATFQQKHIINT-PIICNTIMDNNIYIVGGQCKRVNTFIISSATTVKAICTGVI-NMN 58
              |:| |||:||: ||  : || ||  |::     ||  |||| |    ||||| |:| : |
Db          1 QDWLTFQKKHLTNTRDVDCNNIMSTNLF----HCKDKNTFIYSRPEPVKAICKGIIASKN 56
```

```
Qy          59 VLSTTRFQLNTCTRTSITPRPCPYSSRTETNYICVKCENQYPVHFAGIGRC 109
               ||:|: | |: |   ::| ||| |  :  ||  || |||| |||| |:| |
Db          57 VLTTSEFYLSDC---NVTSRPCKYKLKKSTNTFCVTCENQAPVHFVGVGHC 104
```

RESULT 10
AAY28867
ID AAY28867 standard; Protein; 105 AA.
XX
AC AAY28867;
XX
DT 25-JAN-2000 (first entry)
XX
DE Recombinant Met(-1) RaPLR1.
XX
KW Recombinant Met(-1) Rana pipiens ribonuclease; RaPLR1; CD22; RNase;
KW covalently bound; LL2 antibody; ligand binding moiety; cancerous B cell;
KW Kaposi's sarcoma; human chorionic gonadotrophin; hCG; signal peptide;
KW recombinant ribonuclease; cytotoxic fusion protein; cancer; frog;
KW autoimmune disease.
XX
OS Rana pipiens.
OS Synthetic.
XX
FH Key   Location/Qualifiers
FT Misc-difference 1
FT   /note= "Met not found in wild type RaPLR1"
XX
PN WO9950398-A2.
XX
PD 07-OCT-1999.
XX
PF 26-MAR-1999; 99WO-US06641.
XX
PR 27-MAR-1998; 98US-0079751.
XX
PA (USSH) US DEPT HEALTH & HUMAN SERVICES.
XX
PI Newton DL, Rybak SM;
XX
DR WPI; 1999-610847/52.
DR N-PSDB; AAZ08126.
XX
PT New recombinant ribonucleases, used for killing target cells, e.g. for
PT treating cancers, viral infections or autoimmune diseases -
XX
PS Claim 34; Page 57; 71pp; English.
XX
CC The present sequence is a recombinant Rana pipiens ribonuclease (RaPLR1)
CC protein with Met at position 1. Carboxy terminal end of recombinant
CC RaPLR1 has a covalently bound ligand binding moiety, which can be a LL2
CC antibody directed against CD22 on cancerous B cells or human chorionic
CC gonadotrophin (hCG) effective against Kaposi's sarcoma cells. Recombinant
CC ribonucleases can be expressed in bacteria without an N-terminal
CC methionine due to the presence of a signal peptide that is cleaved by
CC bacteria. The soluble expression of ribonuclease allows the proteins to
CC be fused in-frame with ligand binding moieties to form cytotoxic fusion
CC proteins. They can be used for treatment of cancer and autoimmune
CC diseases.
XX
SQ Sequence 105 AA;

```
  Query Match             46.8%;  Score 281.5;  DB 20;  Length 105;
  Best Local Similarity   49.5%;  Pred. No. 1.4e-24;
  Matches   55;  Conservative   15;  Mismatches   32;  Indels    9;  Gaps    4;

Qy          1 QNWATFQQKHIINT-PIICNTIMDNNIYIVGGQCKRVNTFIISSATTVKAICTGVI-NMN 58
              |:| |||:||: ||  : || ||  |::     ||  |||| |    ||||| |:| :.|
Db          2 QDWLTFQKKHLTNTRDVDCNNIMSTNLF----HCKDKNTFIYSRPEPVKAICKGIIASKN 57

Qy         59 VLSTTRFQLNTCTRTSITPRPCPYSSRTETNYICVKCENQYPVHFAGIGRC 109
              ||:|: | |: |   ::| ||| |  :  ||  || |||| |||| |:| |
```

```
Db          58 VLTTSEFYLSDC---NVTSRPCKYKLKKSTNTFCVTCENQAPVHFVGVGHC 105
```

RESULT 11
AAY28879
ID AAY28879 standard; Protein; 127 AA.
XX
AC AAY28879;
XX
DT 25-JAN-2000 (first entry)
XX
DE Rana pipiens Clone 5a1b ribonuclease.
XX
KW Rana pipiens ribonuclease Clone 5a1b; RaPLR1; covalently bound; RNase;
KW LL2 antibody; ligand binding moiety; CD22; cancerous B cell; onconase;
KW Kaposi's Sarcoma; human chorionic gonadotrophin; hCG; cancer;
KW recombinant ribonuclease; frog; signal peptide; cytotoxic fusion protein;
KW autoimmune disease.
XX
OS Rana pipiens.
XX
FH Key   Location/Qualifiers
FT Peptide   1..23
FT   /label= Signal_peptide
FT   /note= "Putative"
FT Protein   24..127
FT   /label= Rana_pipiens_Clone_5a1b_ribonuclease
XX
PN WO9950398-A2.
XX
PD 07-OCT-1999.
XX
PF 26-MAR-1999; 99WO-US06641.
XX
PR 27-MAR-1998; 98US-0079751.
XX
PA (USSH) US DEPT HEALTH & HUMAN SERVICES.
XX
PI Newton DL, Rybak SM;
XX
DR WPI; 1999-610847/52.
DR N-PSDB; AAZ08136.
XX
PT New recombinant ribonucleases, used for killing target cells, e.g. for
PT treating cancers, viral infections or autoimmune diseases -
XX
PS Disclosure; Page 69; 71pp; English.
XX
CC The present sequence is a Rana pipiens Clone 5a1b ribonuclease (RaPLR1).
CC It is encoded by Clone 5a1b cDNA obtained from Rana pipiens liver mRNA
CC library. It exhibits differences with Onconase (RTM) at amino acid
CC residues 11, 20, 85 and 103. Carboxy terminal end of RaPLR1 has a
CC covalently bound ligand binding moiety, which can be a LL2 antibody
CC directed against CD22 on cancerous B cells or human chorionic
CC gonadotrophin (hCG) effective against Kaposi's Sarcoma cells. Recombinant
CC ribonucleases can be expressed in bacteria without an N-terminal
CC methionine due to the presence of a signal peptide that is cleaved by
CC bacteria. The soluble expression of ribonuclease allows the proteins to
CC be fused in-frame with ligand binding moieties to form cytotoxic fusion
CC proteins. They can be used for treatment of cancer and autoimmune
CC diseases.
XX
SQ Sequence 127 AA;

```
  Query Match             46.8%;  Score 281.5;  DB 20;  Length 127;
  Best Local Similarity   49.5%;  Pred. No. 1.8e-24;
  Matches   55;  Conservative   15;  Mismatches   32;  Indels    9;  Gaps    4;

Qy          1 QNWATFQQKHIINT-PIICNTIMDNNIYIVGGQCKRVNTFIISSATTVKAICTGVI-NMN 58
              |:| |||:||: ||  : || ||  |::     ||  |||| |    ||||| |:| : |
Db         24 QDWLTFQKKHLTNTRDVDCNNIMSTNLF----HCKDKNTFIYSRPEPVKAICKGIIASKN 79

Qy         59 VLSTTRFQLNTCTRTSITPRPCPYSSRTETNYICVKCENQYPVHFAGIGRC 109
```

```
              ||:|: | |: |   ::| ||| | . :  ||  || |||| |||| |:| |
Db         80 VLTTSEFYLSDC---NVTSRPCKYKLKKSTNTFCVTCENQAPVHFVGVGHC 127
```

RESULT 12
AAY28866
ID   AAY28866 standard; Protein; 104 AA.
XX
AC   AAY28866;
XX
DT   25-JAN-2000 (first entry)
XX
DE   Recombinant RaPLR1 Met23Leu amino acid sequence.
XX
KW   Recombinant Rana pipiens ribonuclease; RaPLR1 Met23Leu; covalently bound;
KW   LL2 antibody; ligand binding moiety; CD22; cancerous B cell; RNase;
KW   Kaposi's sarcoma; human chorionic gonadotrophin; hCG; signal peptide;
KW   recombinant ribonuclease; cytotoxic fusion protein; cancer; frog;
KW   autoimmune disease.
XX
OS   Rana pipiens.
OS   Synthetic.
XX
FH   Key   Location/Qualifiers
FT   Misc-difference 23
FT   /note= "Wild type Met replaced with Leu"
XX
PN   WO9950398-A2.
XX
PD   07-OCT-1999.
XX
PF   26-MAR-1999;   99WO-US06641.
XX
PR   27-MAR-1998;   98US-0079751.
XX
PA   (USSH) US DEPT HEALTH & HUMAN SERVICES.
XX
PI   Newton DL, Rybak SM;
XX
DR   WPI; 1999-610847/52.
DR   N-PSDB; AAZ08125.
XX
PT   New recombinant ribonucleases, used for killing target cells, e.g. for
PT   treating cancers, viral infections or autoimmune diseases -
XX
PS   Claim 34; Page 56; 71pp; English.
XX
CC   The present sequence is a recombinant Rana pipiens ribonuclease (RaPLR1)
CC   protein with Met23Leu. Carboxy terminal end of recombinant RaPLR1 has a
CC   covalently bound ligand binding moiety, which can be a LL2 antibody
CC   directed against CD22 on cancerous B cells or human chorionic
CC   gonadotrophin (hCG) effective against Kaposi's sarcoma cells. Recombinant
CC   ribonucleases can be expressed in bacteria without an N-terminal
CC   methionine due to the presence of a signal peptide that is cleaved by
CC   bacteria. The soluble expression of ribonuclease allows the proteins to
CC   be fused in-frame with ligand binding moieties to form cytotoxic fusion
CC   proteins. They can be used for treatment of cancer and autoimmune
CC   diseases.
XX
SQ   Sequence   104 AA;

```
  Query Match           46.3%;  Score 278.5;  DB 20;  Length 104;
  Best Local Similarity  48.6%;  Pred. No. 3e-24;
  Matches   54;  Conservative   16;  Mismatches   32;  Indels    9;  Gaps    4;

Qy          1 QNWATFQQKHIINT-PIICNTIMDNNIYIVGGQCKRVNTFIISSATTVKAICTGVI-NMN 58
              |:| |||:||: ||  : || |:| |::     ||  |||| |    ||||| |:| : |
Db          1 QDWLIFQKKHLTNTRDVDCNNILSTNLF----HCKDKNTFIYSRPEPVKAICKGIIASKN 56

Qy         59 VLSTIRFQLNTCTRTSITPRPCPYSSRTETNYICVKCENQYPVHFAGIGRC 109
              ||:|: | |: |   ::| ||| |  :  ||  || |||| |||| |:| |
Db         57 VLTTSEFYLSDC---NVTSRPCKYKLKKSTNTFCVTCENQAPVHFVGVGHC 104
```

RESULT 13
AAY28869
ID   AAY28869 standard; Protein; 105 AA.
XX
AC   AAY28869;
XX
DT   25-JAN-2000 (first entry)
XX
DE   Recombinant Met(-1) RaPLR1 Met23Leu-(His)6 protein.
XX
KW   Recombinant Met(-1) Rana pipiens ribonuclease Met23Leu-(His)6; RaPLR1;
KW   CD22; covalently bound; LL2 antibody; ligand binding moiety; RNase;
KW   cancerous B cell; Kaposi's sarcoma; human chorionic gonadotrophin; hCG;
KW   signal peptide; recombinant ribonuclease; cytotoxic fusion protein;
KW   cancer; frog; autoimmune disease.
XX
OS   Rana pipiens.
OS   Synthetic.
XX
FH   Key   Location/Qualifiers
FT   Misc-difference 1
FT   /note= "(His)6 histidine tag attached to N-terminal Met"
FT   Misc-difference 1
FT   /note= "Met not found in wild type RaPLR1"
FT   Misc-difference 24
FT   /note= "Wild type Met replaced with Leu"
XX
PN   WO9950398-A2.
XX
PD   07-OCT-1999.
XX
PF   26-MAR-1999;   99WO-US06641.
XX
PR   27-MAR-1998;   98US-0079751.
XX
PA   (USSH) US DEPT HEALTH & HUMAN SERVICES.
XX
PI   Newton DL, Rybak SM;
XX
DR   WPI; 1999-610847/52.
DR   N-PSDB; AAZ08127.
XX
PT   New recombinant ribonucleases, used for killing target cells, e.g. for
PT   treating cancers, viral infections or autoimmune diseases -
XX
PS   Claim 4; Page 59; 71pp; English.
XX
CC   The present sequence is a recombinant Rana pipiens ribonuclease protein
CC   (RaPLR1) with Met at position 1 attached to (His)6 tag and Met24Leu.
CC   Carboxy terminal end of recombinant RaPLR1 has a covalently bound ligand
CC   binding moiety, which can be a LL2 antibody directed against CD22 on
CC   cancerous B cells or human chorionic gonadotrophin (hCG) effective
CC   against Kaposi's sarcoma cells. Recombinant ribonucleases can be
CC   expressed in bacteria without an N-terminal methionine due to the
CC   presence of a signal peptide that is cleaved by bacteria. The soluble
CC   expression of ribonuclease allows the proteins to be fused in-frame with
CC   ligand binding moieties to form cytotoxic fusion proteins. They can be
CC   used for treatment of cancer and autoimmune diseases.
XX
SQ   Sequence   105 AA;

```
  Query Match           46.3%;  Score 278.5;  DB 20;  Length 105;
  Best Local Similarity  48.6%;  Pred. No. 3.1e-24;
  Matches   54;  Conservative   16;  Mismatches   32;  Indels    9;  Gaps    4;

Qy          1 QNWATFQQKHIINT-PIICNTIMDNNIYIVGGQCKRVNTFIISSATTVKAICTGVI-NMN 58
              |:| |||:||: ||  : || |:  |::     ||  |||| |    ||||| |:| : |
Db          2 QDWLTFQKKHLTNTRDVDCNNILSTNLF----HCKDKNTFIYSRPEPVKAICKGIIASKN 57

Qy         59 VLSTTRFQLNTCTRTSITPRPCPYSSRTETNYICVKCENQYPVHFAGIGRC 109
              ||:|: | |: |   ::| ||| |  :  ||  || |||| |||| |:| |
Db         58 VLTTSEFYLSDC---NVTSRPCKYKLKKSTNTFCVTCENQAPVHFVGVGHC 105
```

```
RESULT 14
AAW30301
ID   AAW30301 standard; protein; 104 AA.
XX
AC   AAW30301;
XX
DT   09-JUN-1998  (first entry)
XX
DE   Recombinant onc protein.
XX
KW   Onc; oncanase; ribonuclease; frog; antitumour; pancreatic cancer;
KW   human immunodeficiency virus type-1; HIV1; replication.
XX
OS   Rana pipiens.
XX
PN   WO9738112-A1.
XX
PD   16-OCT-1997.
XX
PF   04-APR-1997;   97WO-US05675.
XX
PR   04-APR-1996;   96US-0626288.
XX
PA   (USSH ) US DEPT HEALTH & HUMAN SERVICES.
XX
PI   Ardelt W, Boix E, Vasandani VM, Wu YN, Youle RJ;
XX
DR   WPI; 1997-512725/47.
XX
PT   Recombinant Onc protein with glutamine residue at position 1 -
PT   useful as antitumour and antiviral agent, also as cell culture
PT   selection agent
XX
PS   Claim 1; Page 28; 35pp; English.
XX
CC   This sequence represents a recombinant Onc protein comprising a 104 amino
CC   acid sequence having Gln at position 1. Onc, a ribonuclease from Rana
CC   pipiens oocytes, is known as an antitumour agent (e.g. for treating
CC   pancreatic cancer) and inhibitor of human immunodeficiency virus type-1
CC   replication.  It can be used therapeutically or as a cell-culture
CC   selection agent, e.g. to identify gene therapy compositions able to
CC   inhibit tumour growth.
XX
SQ   Sequence   104 AA;

  Query Match             46.1%;  Score 277.5;  DB 18;  Length 104;
  Best Local Similarity   49.5%;  Pred. No. 4e-24;
  Matches   55;  Conservative   15;  Mismatches   32;  Indels    9;  Gaps    4;

Qy          1 QNWATFQQKHIINT-PIICNTIMDNNIYIVGGQCKRVNTFIISSATTVKAICTGVI-NMN 58
              |:| |||:||| ||  : |: ||  |::     ||  |||| |    ||||| |:| : |
Db          1 QDWLTFQKKHITNTRDVDCDNIMSTNLF----HCKDKNTFIYSRPEPVKAICKGIIASKN 56

Qy         59 VLSTTRFQLNTCTRTSITPRPCPYSSRTETNYICVKCENQYPVHFAGIGRC 109
              ||:|: | |: |   ::| ||| |  :  ||  || |||| |||| |:| |
Db         57 VLTTSEFYLSDC---NVTSRPCKYKLKKSTNKFCVTCENQAPVHFVGVGSC 104


RESULT 15
AAB31666
ID   AAB31666 standard; protein; 104 AA.
XX
AC   AAB31666;
XX
DT   30-APR-2001  (first entry)
XX
DE   Amino acid sequence of a frog ribonuclease protein.
XX
KW   Frog; ribonuclease; ranpirnase; RNase.
XX
OS   Rana pipiens.
XX
FH   Key             Location/Qualifiers
FT   Modified-site   1
FT                   /note= "this Gln is autocyclised to pyroglutamic acid"
XX
PN   US6175003-B1.
XX
PD   16-JAN-2001.
XX
PF   10-SEP-1999;   99US-0394268.
XX
PR   10-SEP-1999;   99US-0394268.
XX
PA   (ALFA-) ALFACELL CORP.
XX
PI   Saxena SK;
XX
DR   WPI; 2001-167808/17.
XX
PT   New nucleic acids encoding a ribonuclease (Rnase), useful for the
PT   precise targeting of Rnase to a predetermined cell receptor -
XX
PS   Claim 1; Columns 5-6; 7pp; English.
XX
CC   The present sequence represents a frog ribonuclease protein (ranpirnase)
CC   (RNase). The specification describes a synthetic ribonuclease protein,
CC   in which the addition of cysteine in the ribonuclease facilitates the
CC   chemical linking of a targeting molecule by the single reactive
CC   sulfhydryl group. The specification also describes a method for the
CC   production of ranpirnase using DNA technology instead of processing
CC   biological material. The re-engineering of the protein molecule allows
CC   easier attachment to a targeting molecule thereby making it possible for
CC   the ribonuclease to be delivered to a particular cell receptor where it
CC   might be most effective.
XX
SQ   Sequence   104 AA;

  Query Match             46.1%;  Score 277.5;  DB 22;  Length 104;
  Best Local Similarity   49.5%;  Pred. No. 4e-24;
  Matches   55;  Conservative   15;  Mismatches   32;  Indels    9;  Gaps    4;

Qy          1 QNWATFQQKHIINT-PIICNTIMDNNIYIVGGQCKRVNTFIISSATTVKAICTGVI-NMN 58
              |:| |||:||| ||  : |: ||  |::     ||  |||| |    ||||| |:| : |
Db          1 QDWLTFQKKHITNTRDVDCDNIMSTNLF----HCKDKNTFIYSRPEPVKAICKGIIASKN 56

Qy         59 VLSTTRFQLNTCTRTSITPRPCPYSSRTETNYICVKCENQYPVHFAGIGRC 109
              ||:|: | |: |   ::| ||| |  :  ||  || |||| |||| |:| |
Db         57 VLTTSEFYLSDC---NVTSRPCKYKLKKSTNKFCVTCENQAPVHFVGVGSC 104


Search completed: June 25, 2003, 14:48:39
Job time : 33 secs
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